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Title 20 of the California Code of Regulations requires an applicant to discuss “the range of reasonable alternatives to the project, including the no project alternative which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives.”

#### **4.1 NO PROJECT ALTERNATIVE**

As proposed by Watson Cogeneration Company (Applicant), the Watson Cogeneration Steam and Electric Reliability Project (Project) will supply reliable steam, which is critical to the safe and efficient operation of the BP Carson Refinery. If the Project were not licensed and constructed, the refinery would be forced to achieve the required process steam flow by other means, most likely by using auxiliary boilers, which would generate higher levels of air emissions than those of the Project.

#### **4.2 ALTERNATIVE SITE LOCATION**

The Watson Cogeneration Facility was originally designed with provisions for future expansion. The original project took into consideration engineering constraints, site geology, environmental effects, water, waste and fuel constraints, and electric transmission constraints. A plot space was allocated to accommodate a fifth train. If the Project were to be constructed at an alternative location, the alternative site would require extensive additional infrastructure (such as a switchyard, an electrical system, piping, a fuel gas system, a fire water system, a water treatment system, a compressed air system, etc.) to support the operation of a new unit. The infrastructure needed to support the Project is already in place at the existing facility and will be used for the Project

#### **4.3 ALTERNATE PROJECT CONFIGURATIONS**

The Project could be designed to use combustion turbine generators (CTGs) other than the General Electric (GE) 7EA. However, the four existing units at Watson are also GE 7EA CTGs, and the allocated space for the fifth train is ideally suited for the addition of an identical unit. Any other type of a combustion turbine would require a different configuration of the steam systems and would have a significant effect on the existing operation of the facility.

#### **4.4 ALTERNATIVE TECHNOLOGIES**

As previously discussed, the Project design is based on the use of a new GE 7EA CTG. This turbine was selected over other technologies principally because of its environmental effectiveness, fuel conversion efficiency, and ease of integration with the existing Watson Cogeneration Facility. The Applicant considered and ruled out alternative technologies, such as generating units that use fuels such as coal, oil, nuclear, and renewables. None of these fuels or technologies would be able to meet the refinery’s needs for reliable steam supply within the constraints of the existing facility. Therefore, no alternative technologies would meet the goals and objectives of the Project.

#### **4.5 ALTERNATE LINEAR ROUTES**

The Project is an expansion of the existing Watson Cogeneration Facility, and as such, does not require any new off-site linear facilities. Therefore, no alternate linear routes are applicable to this Project.

#### **4.6 WATER SUPPLY ALTERNATIVES**

The Applicant considered numerous potential sources of water supply for the Project. Currently, the Watson Cogeneration Facility receives its entire water supply from the BP Carson Refinery. The Project will operate from a reliable source of reclaimed water. In designing the Project, the Applicant considered water source options, water supplies, and the water policies of relevant agencies and water districts. The Applicant also considered State Water Resources Control Board Resolution 75-58, which lists water sources by the following priority for inland power facility cooling.

- Surface water – water present in lakes, streams, and rivers.
- Reclaimed water – wastewater treatment plant effluent that has received tertiary treatment.
- Municipal supply – water available from a municipal water supply system.
- Agricultural wastewater – drainage water from irrigation practices.
- Aquifer groundwater – groundwater located in the upper and lower aquifers beneath the Project Site.
- Ocean water – water from the Pacific Ocean.

The Applicant chose to rely on reclaimed water. A discussion on the various water supply alternatives and the Applicant's analysis of these alternatives is presented in Section 5.5.2.1, Alternative Water Supplies.

#### **4.7 WASTEWATER MANAGEMENT ALTERNATIVES**

Given the physical and policy relationships between source water and wastewater, the Applicant identified and evaluated wastewater options with source water implications in mind. As with source water, the viability of wastewater management options is largely driven by several water efficacy policies. The following list summarizes the wastewater management alternatives that are discussed in greater detail in Section 5.5.2.2, Wastewater Disposal Alternatives.

- Zero liquid discharge system – a mechanical system that uses membrane technology and heat to effectively reduce liquid wastes to dry waste for landfill disposal.
- Evaporation pond – a large, lined surface impoundment for disposal of wastewater by means of atmospheric drying, which results in a sludge that must be disposed of in a landfill system.
- Deep injection well – the disposal of wastewater by means of well discharge to a geologic formation that is unsuitable for potable water production and isolated from aquifers.
- Disposal to wastewater treatment plant – discharge to a sanitary sewer that connects to a publicly owned treatment works.

- Surface discharge – discharge of wastewater to the ground or receiving waters, including lakes, rivers, or streams.
- Off-site treatment – hauling of wastewater by a contracted service company to a facility in another location that employs one or more treatment technologies.

The existing wastewater treatment system at Watson is permitted for discharge to the Los Angeles Sanitation District under an existing Industrial Wastewater Discharge Permit. On review, the Applicant has determined that the existing wastewater treatment system and permit are adequate to accommodate the fifth train without modification. A copy of the existing permit is provided in Appendix R, Industrial Wastewater Discharge Permit, of this Application for Certification.



Adequacy Issue:	Adequate	Inadequate	DATA ADEQUACY WORKSHEET		Revision No.	0	Date
Technical Area:	<b>Alternatives</b>		Project:	Watson Cogeneration Steam and Electric Reliability Project	Technical Staff:		
Project Manager:			Docket:		Technical Senior:		
<b>SITING REGULATIONS</b>	<b>INFORMATION</b>		<b>AFC PAGE NUMBER AND SECTION NUMBER</b>	<b>ADEQUATE YES OR NO</b>	<b>INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS</b>		
Appendix B (b) (1) (D)	A description of how the site and related facilities were selected and the consideration given to engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, electric transmission constraints, and any other factors considered by the applicant.		Section 4.2; page 4-1				
Appendix B (f) (1)	A discussion of the range of reasonable alternatives to the project, or to the location of the project, including the no project alternative, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives. In accordance with Public Resources Code section 25540.6(b), a discussion of the applicant's site selection criteria, any alternative sites considered for the project, and the reasons why the applicant chose the proposed site.		Sections 4.1-4.7; pages 4-1 through 4-3				
Appendix B (f) (2)	An evaluation of the comparative engineering, economic, and environmental merits of the alternatives discussed in subsection (f)(1).		Sections 4.1-4.7; pages 4-1 through 4-3				

